MEMORANDUM FOR THE CHAIRMAN OF GMAIC

SUBJECT (C): Report of GMAIC TTMTR Team

PROBLEM:

To make preliminary assessment of new cover of TTMTR as it has a bearing on NIE 11-5-59. Attention was focused on factors affecting ICBM configuration, guidance, propulsion, deployment, and priority.

CONCLUSIONS:

1. TTMTR has conducted all launchings to date with a single launch facility.

2. There is no new evidence available on ICBM configuration, guidance, propulsion or deployment.

3. There is no evidence to indicate an operational-type launch facility (prototype) - the existing launch pad could, of course be used for emergency operational purposes.

4. Construction is now underway on a second launch facility, which, in its early stage of construction, bears considerable resemblance to Launch Area "A", the facility in use. The major axis of the new launch area is on an azimuth of approximately 310 degrees true.

5. The present pace of construction indicates that the new launch site is not being built on a "crash" basis.

6. There is no evidence of true underground or "silo-type" launch site(s) in the TTMTR.

7. There is no evidence on present cover to indicate use of new or unusual propellants.

8. The new construction, including the new launch area, is part of an orderly planned expansion of the original missile test range facilities.

[redacted] 25X1

9. The mode of operation for erecting, checkout, servicing and launching of the missiles from launch area "A" cannot be determined from information available to date.

DISCUSSION:

[redacted] 25X1

[redacted] Army, was briefed on 25X1

29 July on material available and on preliminary photo interpretation findings. Information contained in HTA OIES was supplemented by briefings and a series of questions passed to the PI Team by the TTMTR Team (questions and answers are in Tab).

The entire TTMTR coverage presented to the Team was considered with the view of identifying launch facilities. Only the previously known facility in Area "A" is identifiable as such. Area "B", previously considered to be a possible launch area under construction, provides no evidence at this time of being such; it has been referred to the GMAIC Operational Site Team for their consideration.

The new photography does not confirm the configuration of the launch facility in Area "A" previously reported HTA/JR-4/58). The servicing structure looks somewhat different although its exact configuration still cannot be determined. The launch pad appears to be supported by pillars rather than solid walls as previously believed. This would lead to the possibility that the area underneath the launch pad is open although it is just as possible that different "levels" exist below the pad - the photography does not permit determination. (It should be noted that it was strongly recommended by all agencies that the flight path be east of the launch area "A" so that the details of the launch pad could be ascertained. These recommendations apparently were not followed). The method for removing the missile from its transporter (probably rail), erecting the missile, the position and location of the missile during checkout and fueling, and the position of the missile and servicing structure at the time of launch cannot be determined.

[redacted] 25X1

A new launch area is now under construction at the terminus of a 15 n. m. long RR spur. This new launch facility, which is estimated to be about 30 per cent complete, is located to the EE of Launch Area "A" and, with minor exceptions, resembles Launch Area "A". The present cover (6 a.m. local time) shows no evidence of multiple-shift construction efforts and, in fact, shows a virtual absence of construction activity. Estimated completion date, assuming some acceleration over the present pace, could be late Spring or early Summer of 1960. The major axis of this new launch area is on an azimuth of approximately 310 degrees true as opposed to the 90 degree orientation of launch area "A". No work is as yet evident on new instrumentation or guidance facilities to indicate direction(s) of launch from the new area, but it appears that: 1) polar shots will be possible; 2) launches from Area "A" and the new launch area will not mutually interfere.

Another area under construction, a "Y" RR spur off the new 15 n. m. long spur RR, appears to be support-like in nature rather than, at present, having any launching associated function. The early stage of construction precludes assessment of its ultimate function.

Across the main spur line from this "Y" shaped construction area is an area presently considered to be a borrow pit area probably involved in general construction activity (this area has been put forth in SAC MAPIR T59-1 as a possible Titan-type launch site under construction).

Other development completed or initiated at TTMTR since the previous cover includes: 1) Completion and expansion of administrative and support facilities in the Support Area near the town of Tyura Tam; 2) expansion of the instrumentation control facilities and the communications center "A" in the main rangehead area; 3) expansion of the water treatment facilities; 4) expansion of the main power plant area; 5) and numerous other additions throughout the complex.

The entire picture appears to represent a well planned long range program of expansion and development as required.

It is noted that none of the new construction activities at Tyura Tam have been noted in COMINT. This adds to the feeling that the construction is not being done on a "Crash" basis. This also adds to suspicions of the nature of the construction at Sary-Shagan (46lCN-7335E).

COMMENTS AND RECOMMENDATIONS

Comments:

Some of the questions placed with the TT PI Team have not yet been answered. Among these, major questions are number 2, 3, 5, 23, and 25. One of the reasons for this is the fact that original negatives were not available to the TT PI Team until 5 August.

Recommendations:

1. It is strongly recommended that future coverage of the TTMTR include cover in the morning hours and that it include a flight path to the east of launch area "A" in order to obtain coverage of the front of the launch facility which might answer several questions on configuration .

It is also recommended that Sary-Shagan have high priority on any future list for cover.

[redacted] 25X1

Enclosure:
Tab (44 questions and answers)

TAB

Q. 1. Determine the size and shape of the "hole" in the launching pad in Area A.

A. Further examination of Launch Area "A" reveals that the dark area positioned near the center of the concrete launch platform is apparently circular, regularly shaped, of uniform tone, and measures [redacted] 25X1 Although the nature of this dark area is unidentified, its uniformity and regularity indicate that it is not a missile blast or exhaust scar as was previously suggested in HTA/JR-4/58.

Q. 2. Determine whether or not there is a sub-level(s) on which the vehicle could rest if lowered into "hole". If present, determine position as accurately as possible. Check new launch area for any data on this point.

A. Not answered as of report date.

Q. 3. Check precise measurement of tower.

A. No formal answer as of report date.

Q. 4. Check all rail equipment for any unusual carriage and for erecting gear.

A. There is one 75/80 foot rail car present at Area "A" which has portion [redacted] which is raised above the bed of the car. 25X1 (There is conjecture that this may be a crane car, although no boom is definite)

Q. 5. Check all areas of TBMR for any possible missile, missile stage or missile tankage.

A. Not answered in full as of report date.

Q. 6. Determine similarities and/or differences between present launch pad and new pad.

A.

Launch Area "A"	"New Launch Area"
Launching platform positioned directly opposite control bunker	Apparently to be the same
Control bunker positioned to the left of the launching platform with reference to the general orientation of the rail spur.	Apparently to be the same
Center of the control bunker positioned 660 feet from center of launching platforms.	Center of apparent control bunker positioned 450 feet from center of launching platform.
Launching platform measures 160 X 135 feet.	Apparently launch platform will be approximately 100 X 100 feet.
The launching platform does not appear to have solid walls but appears to be partially open with two 30 foot pillars supporting the platform.	The construction of the launching platform cannot be positively determined as to whether it will have solid walls or be partially open with supporting pillars.
The surface of the launching platform is 135 feet above the base of the pit.	The present level of the launching platform above the base of the pit is 40 feet. The height from the base of the pit to the general ground level is 100 feet.

The launching platforms in both areas are positioned in relatively the same location as to their respective pits.

Q. 7. Check buildings (run-through) for possibilities of covered launch site (BOMARC concept).

A. Scale and quality of photography precludes determination that any of the run-through buildings at the TT complex have a "BOMARC" potential or are capable of displacement.

Q. 8. Make comparative search for any tracking radars.

A. No formal answer as of report date.

Q. 9. Search TASHAUZ area for radar facilities (most likely located on or very near great circle flight path - TT/KLYUCHI impact area - extended rearwards).

A. A search of the TASHAUZ area failed to reveal any radar facilities or other types of missile related instrumentation. The airfield, which appears on far oblique photography, was not active. Scale factors and lack of stereo on the far oblique photos may have some bearing on the failure to recovery any radar.

Q. 10. Provide details on possible collimating towers on launch pad in Area A.

A. The new photo coverage does not permit a more detailed analysis than that given in A-1-20.

Q. 11. Check old fuel area and possible new fuel area for any features distinguishing type of fuel utilized.

A. There appears to be no direct physical connection between the "old" and "new" areas. Both have water input and are rail and road served. Due to lack of complete photo coverage of the old propellant area the entire facility cannot be analyzed. In the new area the present appearance is that of fuel handling rather than manufacturing.

Q. 12. Check new possible fuel area for indications of special handling equipment or facilities possible connecting preparation for using more exotic, high-energy fuels.

A. The only possible fuel handling indication at the new area is the existence of a rail drive into building [redacted] rail cars at entrance) similar in size and appearance to a rail drive into building located at launch area "A". Another building under construction (130 X 40 feet) is located adjacent to the rail spur. This above mentioned building, a road, and a ditch for a water line are the only indications of construction in this area.

Q. 13. What are the possibilities that the new launch area will possess covered flame exhaust, possibly for "washdown" such as used when fluorine is added to, or used as, the fuel.

A. It does not appear that the "new launch area" will have a covered flame exhaust. The present state of construction and the presence of a cloud and cloud shadow prohibit a projected view of the completed structure. However, it does appear that it will be similar to launch area "A". The launch structure at launch area "A" does not have a covered flame exhaust.

Q. 14. Check all TSTH area, particularly area B, for engine test facility.

A. Area "B" is now serviced by a water line and also a new settlement basin has been built at the terminus of the old drainage ditch leading to the SE from the large rail served building. This installation appears to serve the function of cold flow or component check-out as opposed to hot testing.

Although the clearstory building does not appear to contain any extensive ventilation, exhaust, and heat dissipation measures, or observation and protective measures associated with covered engine test cells, no other area within the EF complex appears to be more closely related to engine test facilities.

Q. 15. Accurately plot rail curvatures leading up to new launch area, old launch area and rail spur(s) leading off new rail line.

A. Answered by line drawings retained at HTA.

Q. 16. Check all rail area for possible rail mounted guidance equipment - radars.

A. No rail mounted guidance equipment is noted.

Q. 17. Assess Area B to be sure it is not used as a launch area.

A. Area "B" shows no indications of having been used as a launch facility up to the present time. There are no launch facilities appurtenances and there are no blast scars visible in the area. The rail line that was thought to extend to the terminal area of the fenced installation actually terminates 1,200 feet south of the drive-through building. No function can be determined for the revetted pad area outside area "B" and there are no indications of activity. The completed "Water Treatment Facility" outside Area "B" appears to have been built exclusively for Area "B". There is a direct water line from the large drive-through building to the treatment facility.

Q. 18. Details of the new rail spur area on the new rail line should be plotted to determine, if possible, what the completed area will look like.

A. It cannot be determined from the present activity what the

future function of this area will be. Actual new construction is limited to: 1) A third spur line which would be located between the two completed spur lines possibly may be under construction. 2) Three ditches have been dug out from the water line which runs adjacent to the area. These three ditches actually break into the water line, cut across the road and go under the rail line. A possible pumping house is located near each ditch. 3) There is a large amount of truck activity throughout the general area, however, actual construction is limited (overlay retained at HTA).

Q. 19. Check carefully for any possible ICBM launching pad other than Area A. Is there only one completed launch pad?

A. No completed launch pad, other than the launch structure in Area "A", has been found in the TT rangehead. At this time, the "new launch area" located at the terminus of the new rail spur is the only area that indicates an additional ICBM launch potential.

Q. 20. Determine estimated completion date for new launch area.

A. As a PI "guesstimate" only, the new launch area could be completed by late spring/early summer of 1960.

Q. 21. Check to be sure there is no missile in or on the launcher in Area A.

A. Analysis of shadows caused by objects on the launch structure indicate that no missile is located on or above the surface of the launch platform. Quality of current working materials makes it impossible to determine if a missile is positioned in the "hole" and beneath the surface of the launch platform.

Q. 22. Determine azimuth of launch direction plotted 40 degrees from north and projected from estimated launch platform.

A. This question, as well as question 19, was answered by line drawings, retained at HTA.

Q. 23. Launch Area "A" determines relative positions of observation (Camera?) ports and bunkers around pit and the surface of the launching structure. What is vertical angular coverage capability from the observation ports? Where does direct lines of sight from ports and bunkers (and structures on top of bunkers) strike launching structure.

A. Not answered as of report date.

Q. 24. Re the servicing "struts" on launch pad "A". Does this structure move away (e.g., on rails), during launch? Is there any opening at center juncture of struts - size? Can this size be equated to t the diameter of the servicing tower? Can entire dark circular area, with struts, be elevated and lowered - into launch pads?

A. Not answered as of report date.

Q. 25. Launch Pad "A". Determine dimensions of new "conduit" which roughly parallels previous one leading from control bunker to launch pad. Can construction materials be determined? What is course of new conduit - its gradient, point of origin and final end?

A. Not answered as of report date.

Q. 26. Launch "A" area. Could the new "structure" appearing adjacent to pad be an elevator? Describe in full.

A. The new structure does not appear to be an elevator. There is no evidence of any excavation such as spoil or disturbance of the wall of the pit. The structure appears to be a concrete bunker, possibly elevated [redacted] above the level of the launch platform. It measures [redacted] 25X1 25X1

Q. 27. Have any structures showing above ground on previous cover been removed which could possibly have been surface cover for underground launch site(s)? (Removal might leave scars which camouflage original construction scars). Examine Area "A" and Area "B" from this viewpoint.

A. Reference areas "A" and "B". There are no indications that any structures apparent on previous cover and since removed could have been used for cover of underground launch site(s).

Q. 28. Area "B". Determine if the physical security of this area, which appears greater than that at any other part of the TT Complex, resembles that at any known nuclear (testing, warhead storage - arming and fuzing areas) facilities.

A. A comparison of the physical appearances of several known nuclear warhead storage areas within the USSR was made to the area in question. No section within area "B" was found which resembled, even in miniature, any of these installations.

Q. 29. In Area "A" and "new launch area" check the "spoils heaps", "hillocks" or whatever they are for any possible indications of underground missile storage and/or launch facilities completed or under construction (tunnel effect, out the sides of "hills, out of tops of "hills"). Similarly, check for any underground access to these "hills" from other points in the two areas - roads, railroad, personnel.

A. The "hillocks" at the new launch area are now determined to be spoil from the excavations since they do not appear on the earlier photographic coverage.

The spoil banks in both launch areas have been examined and no indications of underground activity was noted. Consequently, there is no evidence of entrances into these spoil banks.

Q. 30. Areas A, B, "Propellant areas", control center(s).
Any evidence of air conditioning?

A. None of the areas of interest requested revealed evidence of a sophisticated type of air conditioning, i.e., forced draft cooling towers, cascade type water aeration towers normally associated with refrigeration, or air conditioning. However, many of the buildings do have vents on the roof.

Q. 31. Is there any possibility that silo-type launch facilities exist in the "pear-shaped pit" in Area "A"? Either in the center of the pit or near the edges? Any signs of entrances to pit from terrace levels? Any signs of track activity along terraces, to indicate missile servicing is accomplished from terraces? Any track, etc. activity from launch pad or other facilities to the terrace levels?

A. There are no indications that silo-type launch facilities exist in the "pear-shaped pit", either in the center or near the edges. There are no signs of any entrances to the pit from terrace levels, nor is there track activity along the terraces to indicate missile servicing from pit. No track activity exists from the launch pad or other facilities to the terrace levels.

Q. 32. In regard to tempo of work displayed in numbers and types of construction equipment, work in progress, time of day, road and RR support, workers' housing, etc., can a statement be made regarding apparent urgency attached to the new construction in "new launch area"?

A. Answered orally to effect that no evidence of "crash" program.

Q. 33. What evidence, if any, is there that an underground launch site is being constructed in "new launch area" or in the small "siding" about 5 n.m. out on the new rail spur? Is there any evidence of construction of underground launch sites anywhere at TT?

A. Answered orally in the negative.

Q. 34. Is there any evidence in the "new launch area" that this area is more for "operational use" than the old launch area "A"?

A. There is no evidence so far to indicate that the new launch area will be more closely associated to "operational use" than launch area "A". From an over-all standpoint, the inclusion of a check-out building within the fenced area is probably the most outstanding feature excluding of course, the new rail-served area

10 miles SW for which no function is yet determined.

Q. 35. In Area "A" and Area "B", have any significant changes (additions, alterations, deletions) occurred since previous cover? What are they?

A. Overlays depicting changes in Areas "A" and "B" are attached. Changes that represent additions are shown in blue, and changes that represent deletions are shown in green. In Area "B" the red lines represent no change.
(The base report for overlays is JR-4-58)
(The overlays referred to are retained at HEA)

Q. 36. Regarding the "cruciform-figured" installation in the rangehead area, - compare present cover with previous for anything new that can be learned re functions, frequencies, etc.

A. The "cruciform-figured" installation is unchanged from the original coverage. This installation is not in stereo on the new mission and it is believed that nothing new can be learned from the new photography regarding this interferometer.

Q. 37. Search main RR line as far as present cover permits, including line to E and S towards DZHUSALY. If any possible missile-carrying cars and/or missiles are present, analyze in detail. Anything else of significance visible along main line?

A. There are two 75/80 foot tapered cars present at Launch Area "A". These cars have a 35 foot slit or opening in the roof. Another car which is 75/80 foot long is either partially loaded or has a superstructure at one end which is [redacted] 25X1
(This car was mentioned in Request #4). Four other 65/70 foot cars were parked on a curve between the Launch Support Area and area "B". These cars have no unusual configuration. Another 75/80 foot car is parked beside the drive-through building in the Launch Support Area. The quality of the photography precludes determining the configuration of this car.

Q. 38. What development of the airfield at Tyura Tam, besides asphalting of runway, has been conducted? Any evidences of ground handling equipment, or new storage facilities or access road, or improvements to direct road access from airstrip to launch area "A"?

A. The following changes have been noted concerning the airfield at Tyura Tam: 1) Addition of a hard surfaced parking apron and taxiway. 2) Helicopter pads adjacent to parking apron. 3) Eight new buildings located approximately 300 and 800 feet south of the parking apron. Two of the larger buildings are under construction, 175 X 45 and 95 X 40 feet. A motor pool is located nearby. 4) A gravel road leading from the parking apron directly to the housing and administrative area. 5) A hard surfaced all-weather road leading indirectly to commo area "B" and the housing and administrative area. 6) A ditch leading from the near vicinity of commo area "B" toward the parking apron. However, it is not as yet completed to that point. This ditch may be a cable from commo area "B" or a tap from a water line near the commo area, or both. A small but tall 10 foot square structure or building is almost astride this ditch. This building is located in the group under construction near the parking apron. No direct access was noted between the airfield and launch area "A".

Q. 39. Please examine the "tank" in "new launch area" in relation to [redacted] 25X1
[redacted] dark circular area in Launch Area "A", on launch pad. 25X1
Could they be similar in function? If so, does this "fit" at all with rest of installation under construction or does it ruin the possible layout? Would this make the new pit dimensions similar to that in Area "A"?

A. Answered verbally by Fitzgerald, 3 Aug. 59. Opinion was negative.

Q. 40. Re Propellant area: What is nature of new construction West of RR line, approximately opposite Water Storage Area on

large hillock?

A. New construction consists of: 1) Five buildings including one under construction, 2) a road serving the buildings, 3) a rail spur serving the area, 4) a water line under construction in the area, and 5) small objects lying about, probably construction supplies. No security precautions are noted.

Q. 41. Launch Area "A" - "Service Tower". Determine relationship of [redacted] wide track versus what in 1957 coverage was called a service tower having top diameter of [redacted] Compare shadow length of super structures on pad area on present coverage versus previous coverage. Any indication of absence of any facility (structure) which could use [redacted] track? 25X1 25X1 25X1

A. Answer not received as of report date.

Q. 42. In town area of Tyura Tam - has any personnel, administration or support area been enlarged since previous cover, besides that work underway on previous cover? If so, please provide details.

A. Reference page 21, JR-4-58 (TT Report), and Request #38.

The following expension has been made in the Support Base:

1. Administration and Support Area: 29 new buildings (mostly large administrative apartment types) have been added. 14 complete, 15 are under construction.
2. Outside the southern and eastern side of Commo area "B": 16 new buildings, all completed.
3. Airfield: See Request #38.
4. Main power Plant: Area has been fenced, two large rail drive in buildings and five smaller buildings have been added as well as new waste disposal ponds.
5. Water treatment facilities have been expanded.
6. Storage and Construction Support Area is virtually unchanged.
7. Tyura Tam Village is unchanged.

[redacted] 25X1

Q. 43. Please make a statement re possible Silo (Titan type) site construction in "borrow pit" area opposite new rail spur area 10 miles SW of new launch area (Reference SAC report).

A. It is the opinion of the TT PI team that the "silo site" as referenced by SAC is nothing more than a borrow pit. The following reasons are given: 1) There is no indication of any hard construction or man-made objects on that side of the rail line; 2) construction is progressing on the other side of the rail line as evidenced by the three excavations along the water line oriented toward the rail spur served area; 3) it looks like a borrow pit or quarry; 4) no security precautions; 5) small circular ground configurations or objects visible on '59 photography were also visible on the '57 photography. No track activity of any kind is indicated on the 1957 photography.

Q. 44. Area "B". Determine turn radii associated with bunkered "pad" area outside main part of Area "B". How much cover (earth, etc) over tanks in Area "B" and at bunkered "pad" area?

A. The access road to the revetted pad outside the main gate of area "B" has three ninety degree turns. The first two turns are right angles with less than a 15 foot turning radius. The one leading into the revetted pad has a 45 to 50 foot radius.

The 1957 coverage shows that the tanks in the two excavations north of the building in area "B" are so positioned that their tops are nearly at ground level or slightly below. The 1959 coverage shows that these tanks are covered and have a bunker-like appearance. The tops of the bunkers are slightly above ground level. It is estimated there is about five feet of earth cover over the tanks. Two paved roads, possibly sloping downward, provide access to the two bunkered tanks.

The 1957 coverage shows a tank emplaced in an excavation on the south side of the building. The 1959 coverage shows this tank to be covered, at ground level, and served by a concrete road. This tank has no more than one or two feet of earth cover.

The 1957 coverage shows the storage tank and access road in the bunkered area to be under construction. The 1959 coverage shows an above ground storage tank with an access road completed. The diameter of this tank is [redacted] its height is 25X1
undetermined. There is a [redacted] object on top 25X1
of the tank that could serve as a ventilator or expansion chamber.